

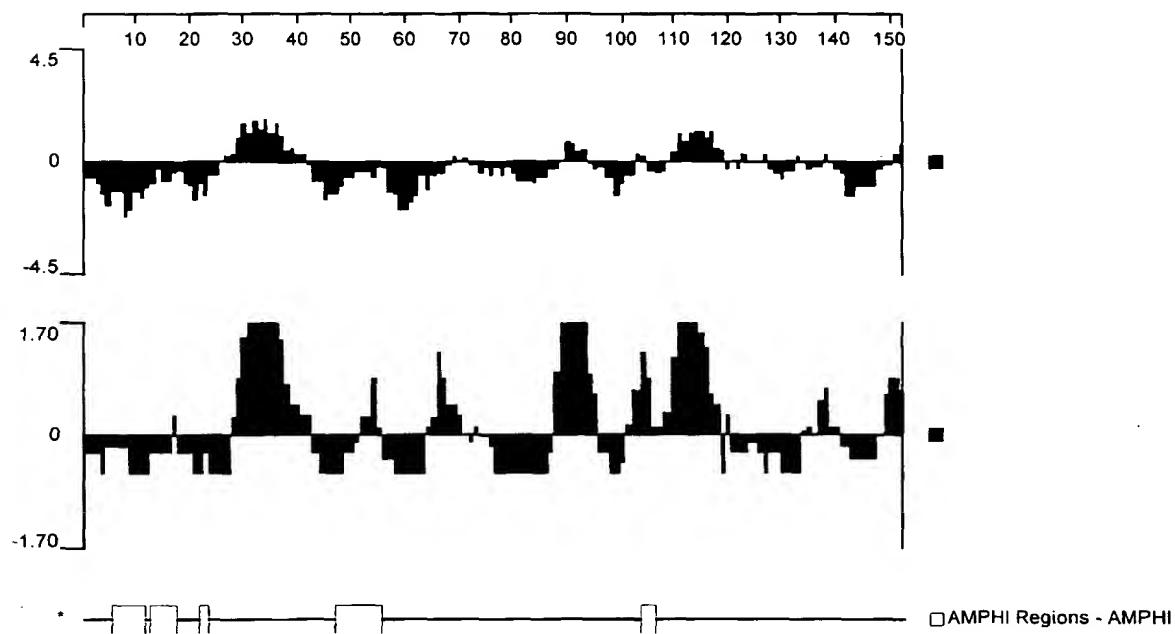
279Hydrophilicity Plot, Antigenic Index and AMPHI Regions

Fig. 11

576-1

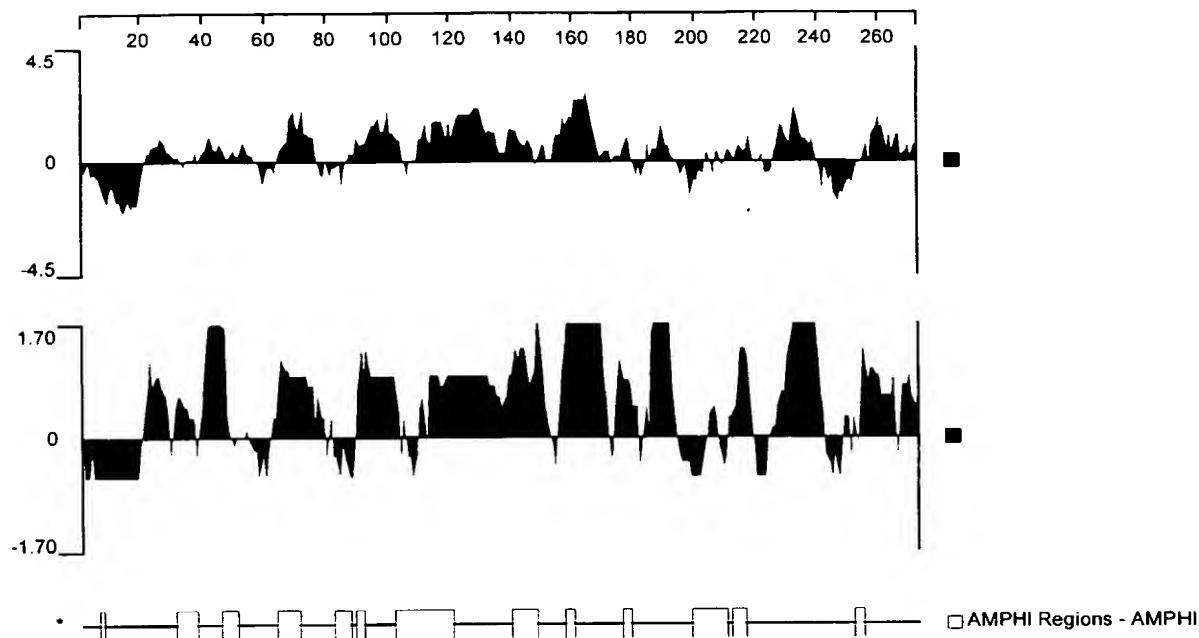
Hydrophilicity Plot, Antigenic Index and AMPHI Regions

Fig. 12

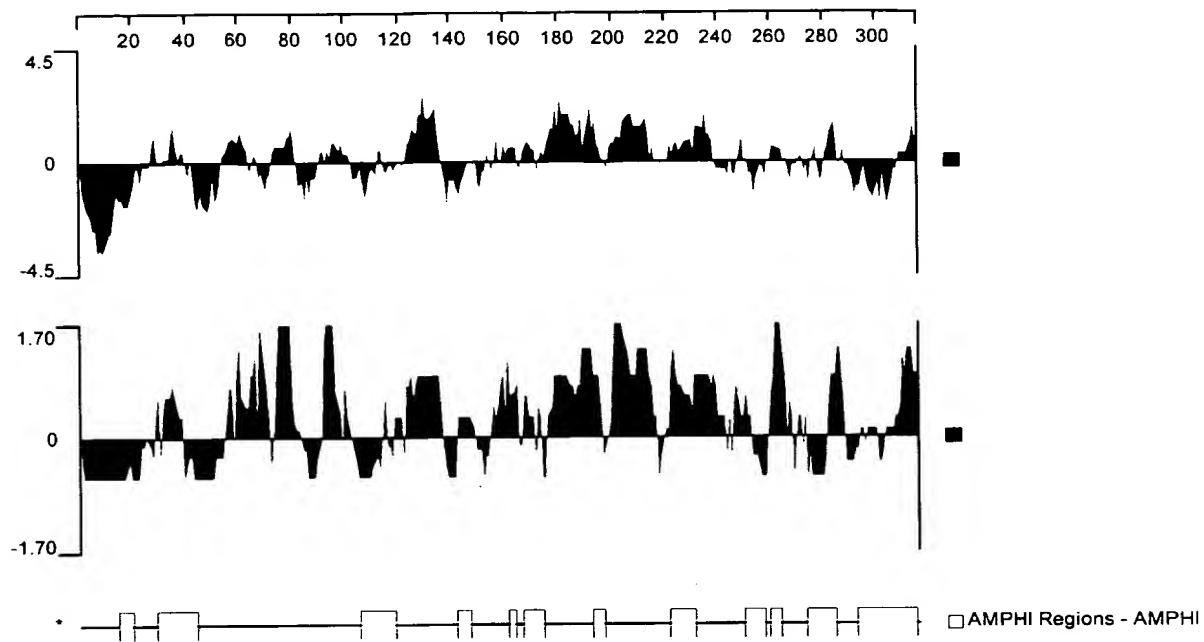
519-1**Hydrophilicity Plot, Antigenic Index and AMPHI Regions**

Fig. 13

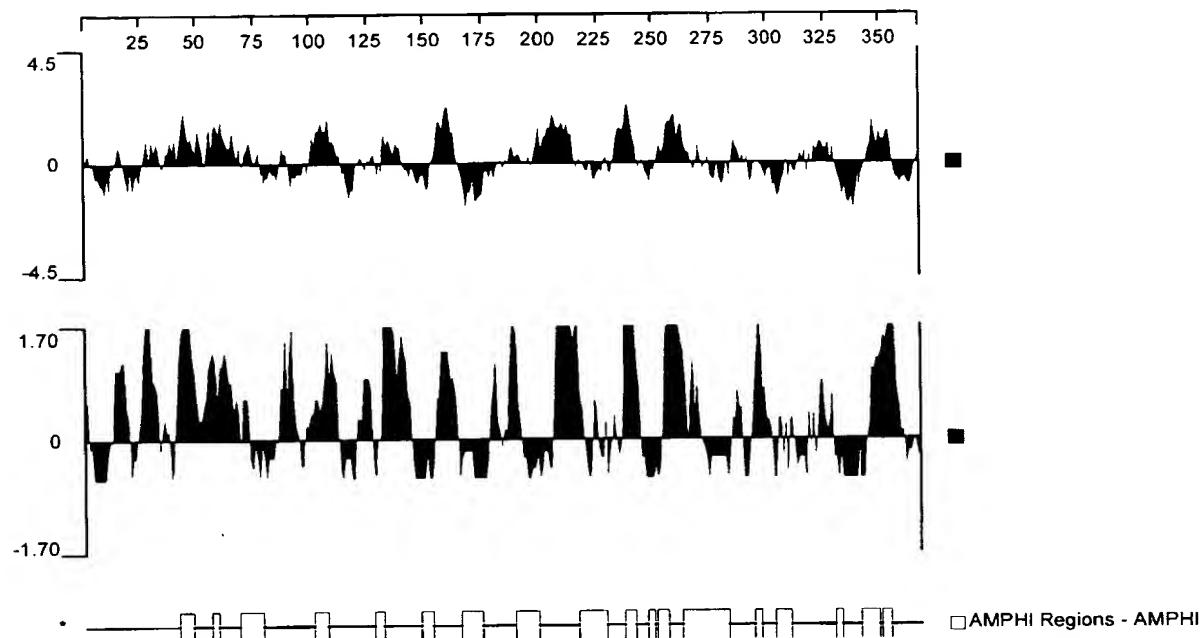
121-1Hydrophilicity Plot, Antigenic Index and AMPHI Regions

Fig. 14

128-1
Hydrophilicity Plot, Antigenic Index and AMPHI Regions

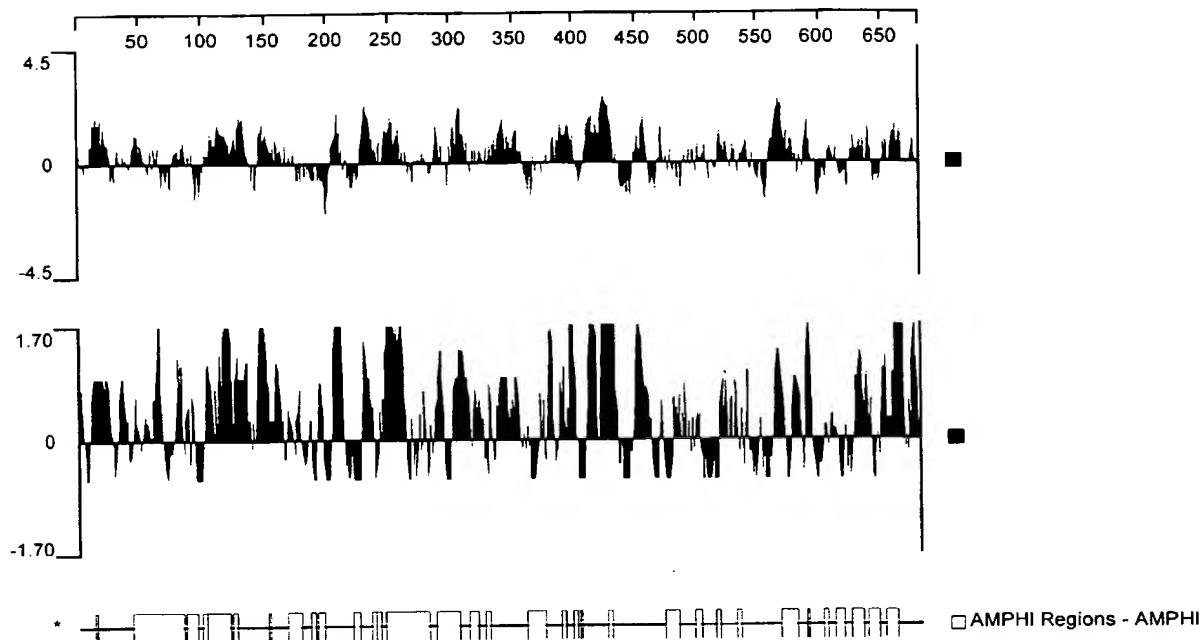


Fig. 15

206
Hydrophilicity Plot, Antigenic Index and AMPHI Regions

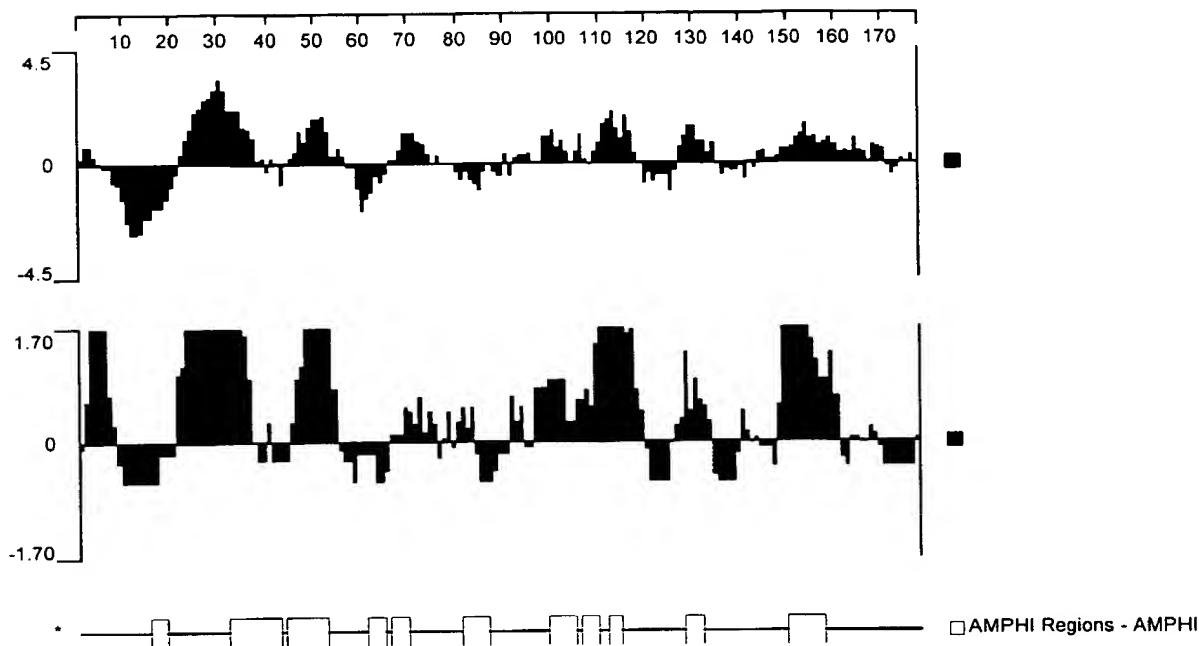


Fig. 16

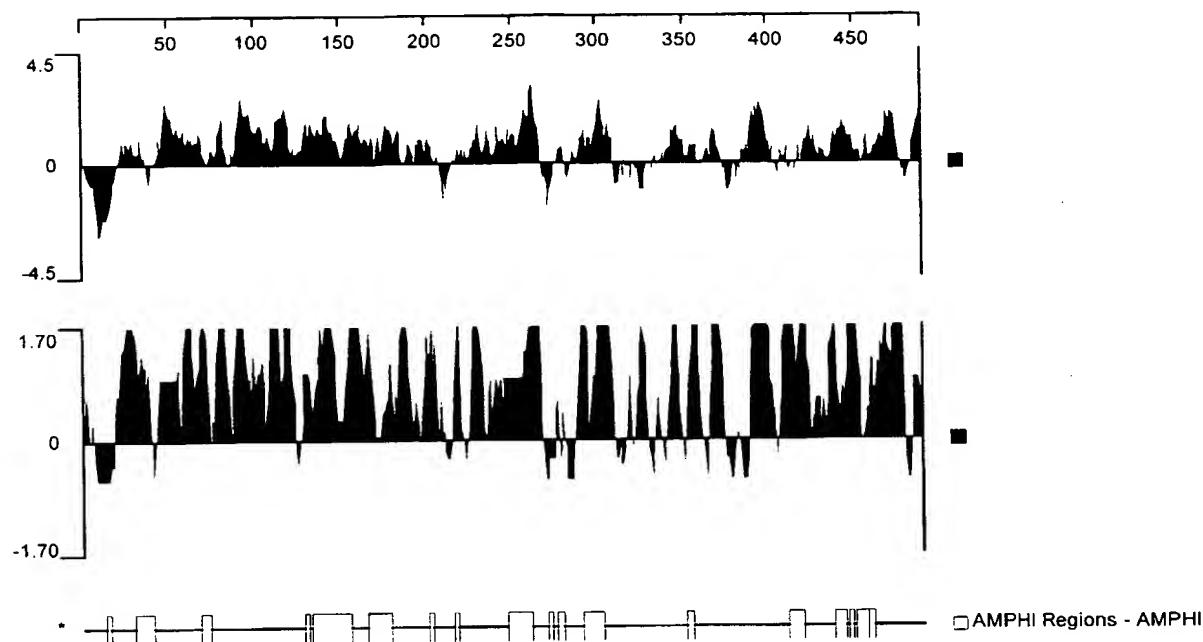
287Hydrophilicity Plot, Antigenic Index and AMPHI Regions

Fig. 17

406

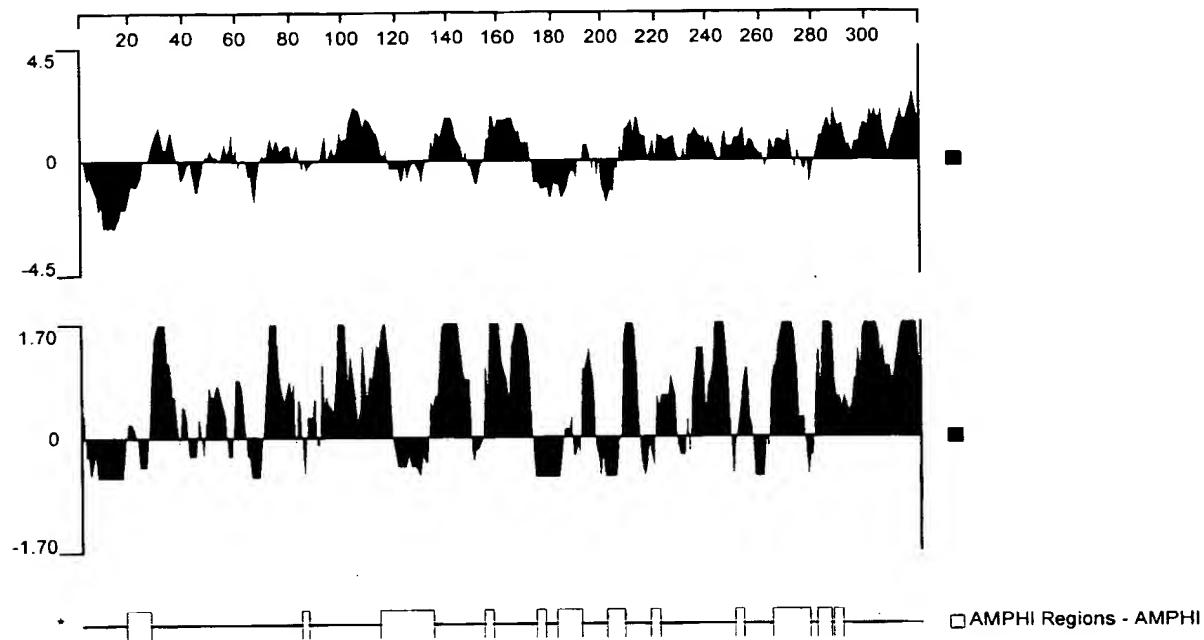
Hydrophilicity Plot, Antigenic Index and AMPHI Regions

Fig. 18

zo05_225	1	MDSFFKPAVWAFLWLMFAVRPALADELTNLLSSREQILRQFAEDEQPVLPINRAPARRAG
zo08_225	1	MDSFFKPAVWAFLWLMFAVRPALADELTNLLSSREQILRQFAEDEQPVLPINRAPARRAG
z2491	1	MDSFFKPAVWAFLWLMFAVRPALADELTNLLSSREQILRQFAEDEQPVLPINRAPARRAG
zo11_225	1	MDSFFKPAVWAFLWLMFAVRPALADELTNLLSSREQILRQFAEDEQPVLPINRAPARRAG
zo20_225	1	MDSFFKPAVWAFLWLMFAVRPALADELTNLLSSREQILRQFAEDEQPVLPINRAPARRAG
zo01_225	1	MDSFFKPAVWAFLWLMFAVRPALADELTNLLSSREQILRQFAEDEQPVLPINRAPARRAG
zo09_225	1	MDSFFKPAVWAFLWLMFAVRPALADELTNLLSSREQILRQFAEDEQPVLPINRAPARRAG
zo12_225	1	MDSFFKPAVWAFLWLMFAVRPALADELTNLLSSREQILRQFAEDEQPVLPINRAPARRAG
zo22_225	1	MDSFFKPAVWAFLWLMFAVRPALADELTNLLSSREQILRQFAEDEQPVLPINRAPARRAG
zo23_225	1	MDSFFKPAVWAFLWLMFAVRPALADELTNLLSSREQILRQFAEDEQPVLPINRAPARRAG
zo24_225	1	MDSFFKPAVWAFLWLMFAVRPALADELTNLLSSREQILRQFAEDEQPVLPINRAPARRAG
zo25_225	1	MDSFFKPAVWAFLWLMFAVRPALADELTNLLSSREQILRQFAEDEQPVLPINRAPARRAG
zo26_225	1	MDSFFKPAVWAFLWLMFAVRPALADELTNLLSSREQILRQFAEDEQPVLPINRAPARRAG
zo06_225	1	MDSFFKPAVWAFLWLMFAVRPALADELTNLLSSREQILRQFAEDEQPVLPINRAPARRAG
zo02_225	1	MDSFFKPAVWAFLWLMFAVRPALADELTNLLSSREQILRQFAEDEQPVLPINRAPARRAG
zo04_225	1	MDSFFKPAVWAFLWLMFAVRPALADELTNLLSSREQILRQFAEDEQPVLPINRAPARRAG
zo06_225	1	MDSFFKPAVWAFLWLMFAVRPALADELTNLLSSREQILRQFAEDEQPVLPINRAPARRAG
zo07_225	1	MDSFFKPAVWAFLWLMFAVRPALADELTNLLSSREQILRQFAEDEQPVLPINRAPARRAG
zo10_225	1	MDSFFKPAVWAFLWLMFAVRPALADELTNLLSSREQILRQFAEDEQPVLPINRAPARRAG
zo14_225	1	MDSFFKPAVWAFLWLMFAVRPALADELTNLLSSREQILRQFAEDEQPVLPINRAPARRAG
zo16_225	1	MDSFFKPAVWAFLWLMFAVRPALADELTNLLSSREQILRQFAEDEQPVLPINRAPARRAG
zo17_225	1	MDSFFKPAVWAFLWLMFAVRPALADELTNLLSSREQILRQFAEDEQPVLPINRAPARRAG
zo18_225	1	MDSFFKPAVWAFLWLMFAVRPALADELTNLLSSREQILRQFAEDEQPVLPINRAPARRAG
zo19_225	1	MDSFFKPAVWAFLWLMFAVRPALADELTNLLSSREQILRQFAEDEQPVLPINRAPARRAG
zo21_225	1	MDSFFKPAVWAFLWLMFAVRPALADELTNLLSSREQILRQFAEDEQPVLPINRAPARRAG
zo27_225	1	MDSFFKPAVWAFLWLMFAVRPALADELTNLLSSREQILRQFAEDEQPVLPINRAPARRAG
zo28_225	1	MDSFFKPAVWAFLWLMFAVRPALADELTNLLSSREQILRQFAEDEQPVLPINRAPARRAG
zo29_225	1	MDSFFKPAVWAFLWLMFAVRPALADELTNLLSSREQILRQFAEDEQPVLPINRAPARRAG
zo13_225	1	MDSFFKPAVWAFLWLMFAVRPALADELTNLLSSREQILRQFAEDEQPVLPINRAPARRAG
zo03_225	1	MDSFFKPAVWAFLWLMFAVRPALADELTNLLSSREQILRQFAEDEQPVLPINRAPARRAG
zo15_225	1	MDSFFKPAVWAFLWLMFAVRPALADELTNLLSSREQILRQFAEDEQPVLPINRAPARRAG
fa1090	1	MDSFFKPAVWAFLWLMFAVRPALADELTNLLSSREQILRQFAEDEQPVLPINRAPARRAG
zo32_225	1	MDSFFKPAVWAFLWLMFAVRPALADELTNLLSSREQILRQFAEDEQPVLPINRAPARRAG
zo33_225	1	MDSFFKPAVWAFLWLMFAVRPALADELTNLLSSREQILRQFAEDEQPVLPINRAPARRAG
zo05_225	61	NADELIGSAMGLNE.....
zo08_225	61	NADELIGSAMGLNE.....
z2491	61	NADELIGSAMGLNEQPVLPVNRVPARRAGNADELIGSAMGLNEQPVLPVNRVPARRAGNA
zo11_225	61	NADELIGSAMGLNEQPVLPVNRVPARRAGNADELIGSAMGLNEQPVLPVNRVPARRAGNA
zo20_225	61	NADELIGSAMGLNEQPVLINRAPARRAGNADELIGSAMGLNEQPVLINRAPARRAGNA
zo01_225	61	NADELIGSAMGLNE.....
zo09_225	61	NADELIGSAMGLNE.....
zo12_225	61	NADELIGSAMGLNE.....
zo22_225	61	NADELIGSAMGLNE.....
zo23_225	61	NADELIGSAMGLNE.....
zo24_225	61	NADELIGSAMGLNE.....
zo25_225	61	NADELIGSAMGLNE.....
zo26_225	61	NADELIGSAMGLNE.....
zo06_225	61	NADELIGSAMGLNE.....
zo02_225	61	NADELIGSAMGLNE.....
zo04_225	61	NADELIGSAMGLNE.....
zo06_225	61	NADELIGSAMGLNE.....
zo07_225	61	NADELIGSAMGLNE.....
zo10_225	61	NADELIGSAMGLNE.....
zo14_225	61	NADELIGSAMGLNE.....
zo16_225	61	NADELIGSAMGLNE.....
zo17_225	61	NADELIGSAMGLNE.....
zo18_225	61	NADELIGSAMGLNE.....
zo19_225	61	NADELIGSAMGLNE.....
zo21_225	61	NADELIGSAMGLNE.....
zo27_225	61	NADELIGSAMGLNE.....
zo28_225	61	NADELIGSAMGLNE.....
zo29_225	61	NADELIGSAMGLNE.....
zo13_225	61	NADELIGSAMGLNE.....
zo03_225	61	NADELIGSAMGLNE.....
zo15_225	61	NADELIGSAMGLNE.....
fa1090	61	NADELIGSAMGLNE.....
zo32_225	61	NADELIGSAMGLNE.....
zo33_225	61	NADELIGSAMGLNE.....

FIG. 19A

FIG. 19B

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zo05_225	212	IHAPRTGKNIEITSLSHKYWSGKYAFARRVKNDPSRFLN*
zo08_225	212	IHAPRTGKNIEITSLSHKYWSGKYAFARRVKNDPSRFLN*
z2491	241	IHAPRTGKNIEITSLSHKYWSGKYAFARRVKNDPSRFLN*
zo11_225	241	IHAPRTGKNIEITSLSHKYWSGKYAFARRVKNDPSRFLN*
zo20_225	241	IHAPRTGKNIEITSLSHKYWSGKYAFARRVKNDPSRFLN*
zo01_225	212	IHAPRTGKNIEITSLSHKYWSGKYAFARRVKNDPSRFLN*
zo09_225	212	IHAPRTGKNIEITSLSHKYWSGKYAFARRVKNDPSRFLN*
zo12_225	212	IHAPRTGKNIEITSLSHKYWSGKYAFARRVKNDPSRFLN*
zo22_225	212	IHAPRTGKNIEITSLSHKYWSGKYAFARRVKNDPSRFLN*
zo23_225	212	IHAPRTGKNIEITSLSHKYWSGKYAFARRVKNDPSRFLN*
zo24_225	212	IHAPRTGKNIEITSLSHKYWSGKYAFARRVKNDPSRFLN*
zo25_225	212	IHAPRTGKNIEITSLSHKYWSGKYAFARRVKNDPSRFLN*
zo26_225	212	IHAPRTGKNIEITSLSHKYWSGKYAFARRVKNDPSRFLN*
zo96_225	212	IHAPRTGKNIEITSLSHKYWSGKYAFARRVKNDPSRFLN*
zo02_225	212	IHAPRTGKNIEITSLSHKYWSGKYAFARRVKNDPSRFLN*
zo04_225	212	IHAPRTGKNIEITSLSHKYWSGKYAFARRVKNDPSRFLN*
zo06_225	212	IHAPRTGKNIEITSLSHKYWSGKYAFARRVKNDPSRFLN*
zo07_225	212	IHAPRTGKNIEITSLSHKYWSGKYAFARRVKNDPSRFLN*
zo10_225	212	IHAPRTGKNIEITSLSHKYWSGKYAFARRVKNDPSRFLN*
zo14_225	212	IHAPRTGKNIEITSLSHKYWSGKYAFARRVKNDPSRFLN*
zo16_225	212	IHAPRTGKNIEITSLSHKYWSGKYAFARRVKNDPSRFLN*
zo17_225	212	IHAPRTGKNIEITSLSHKYWSGKYAFARRVKNDPSRFLN*
zo18_225	212	IHAPRTGKNIEITSLSHKYWSGKYAFARRVKNDPSRFLN*
zo19_225	212	IHAPRTGKNIEITSLSHKYWSGKYAFARRVKNDPSRFLN*
zo21_225	212	IHAPRTGKNIEITSLSHKYWSGKYAFARRVKNDPSRFLN*
zo27_225	212	IHAPRTGKNIEITSLSHKYWSGKYAFARRVKNDPSRFLN*
zo28_225	212	IHAPRTGKNIEITSLSHKYWSGKYAFARRVKNDPSRFLN*
zo29_225	212	IHAPRTGKNIEITSLSHKYWSGKYAFARRVKNDPSRFLN*
zo13_225	212	IHAPRTGKNIEITSLSHKYWSGKYAFARRVKNDPSRFLN*
zo03_225	212	IHAPRTGKNIEITSLSHKYWSGKYAFARRVKNDPSRFLN*
zo15_225	183	IHAPRTGKNIEITSLSHKYWSGKYAFARRVKNDPSRFLN*
fa1090	183	IHAPRTGKNIEITSLSHKYWSGKYAFARRVKNDPSRFLN*
zo32_225	183	IHAPRTGKNIEITSLSHKYWSGKYAFARRVKNDPSRFLN*
zo33_225	183	IHAPRTGKNIEITSLSHKYWSGKYAFARRVKNDPSRFLN*

Fig. 19C

FIG. 20A

gnmzq09	121	YQILD SVTTVSAKARLVD SRNGKVLWSGSASIREGSNNNSNGLGALVSAVVNQIANSLT
gnmzq31	121	YQILD SVTTVSAKARLVD SRNGKVLWSGSASIREGSNNNSNGLGALVGA VVNQIANSLT
fa1090	121	YQILD SVTTVSAKARLVD SRNGKELWSGSASIREGSNNNSNGLGALVGA VVNQIANSLT
gnmzq32	121	YQILD SVTTVSAKARLVD SRNGKELWSGSASIREGSNNNSNGLGALVGA VVNQIANSLT
gnmzq33	121	YQILD SVTTVSAKARLVD SRNGKELWSGSASIREGSNNNSNGLGALVGA VVNQIANSLT
gnmzq01	121	YQILD SVTTVSAKARLVD SRNGKELWSGSASIREGSNNNSNGLGALVSAVVNQIANSLT
gnmzq05	121	YQILD SVTTVSAKARLVD SRNGKELWSGSASIREGSNNNSNGLGALVSAVVNQIANSLT
gnmzq08	121	YQILD SVTTVSAKARLVD SRNGKELWSGSASIREGSNNNSNGLGALVSAVVNQIANSLT
gnmzq02	121	YQILD SVTTVSAKARLVD SRNGKELWSGSASIREGSNNNSNGLGALVSAVVNQIANSLT
gnmzq03	121	YQILD SVTTVSAKARLVD SRNGKELWSGSASIREGSNNNSNGLGALVSAVVNQIANSLT
gnmzq04	121	YQILD SVTTVSAKARLVD SRNGKELWSGSASIREGSNNNSNGLGALVSAVVNQIANSLT
gnmzq07	121	YQILD SVTTVSAKARLVD SRNGKELWSGSASIREGSNNNSNGLGALVSAVVNQIANSLT
gnmzq10	121	YQILD SVTTVSAKARLVD SRNGKELWSGSASIREGSNNNSNGLGALVSAVVNQIANSLT
gnmzq11	121	YQILD SVTTVSAKARLVD SRNGKELWSGSASIREGSNNNSNGLGALVSAVVNQIANSLT
gnmzq13	121	YQILD SVTTVSAKARLVD SRNGKELWSGSASIREGSNNNSNGLGALVSAVVNQIANSLT
gnmzq15	121	YQILD SVTTVSAKARLVD SRNGKELWSGSASIREGSNNNSNGLGALVSAVVNQIANSLT
gnmzq16	121	YQILD SVTTVSAKARLVD SRNGKELWSGSASIREGSNNNSNGLGALVSAVVNQIANSLT
gnmzq17	121	YQILD SVTTVSAKARLVD SRNGKELWSGSASIREGSNNNSNGLGALVSAVVNQIANSLT
gnmzq19	121	YQILD SVTTVSAKARLVD SRNGKELWSGSASIREGSNNNSNGLGALVSAVVNQIANSLT
gnmzq21	121	YQILD SVTTVSAKARLVD SRNGKELWSGSASIREGSNNNSNGLGALVSAVVNQIANSLT
gnmzq22	121	YQILD SVTTVSAKARLVD SRNGKELWSGSASIREGSNNNSNGLGALVSAVVNQIANSLT
gnmzq23	121	YQILD SVTTVSAKARLVD SRNGKELWSGSASIREGSNNNSNGLGALVSAVVNQIANSLT
gnmzq24	121	YQILD SVTTVSAKARLVD SRNGKELWSGSASIREGSNNNSNGLGALVSAVVNQIANSLT
gnmzq25	121	YQILD SVTTVSAKARLVD SRNGKELWSGSASIREGSNNNSNGLGALVSAVVNQIANSLT
gnmzq27	121	YQILD SVTTVSAKARLVD SRNGKELWSGSASIREGSNNNSNGLGALVSAVVNQIANSLT
gnmzq28	121	YQILD SVTTVSAKARLVD SRNGKELWSGSASIREGSNNNSNGLGALVSAVVNQIANSLT
gnmzq29	121	YQILD SVTTVSAKARLVD SRNGKELWSGSASIREGSNNNSNGLGALVSAVVNQIANSLT
z2491	121	YQILD SVTTVSAKARLVD SRNGKELWSGSASIREGSNNNSNGLGALVSAVVNQIANSLT
gnmzq14	121	YQILD SVTTVSAKARLVD SRNGKELWSGSASIREGSNNNSNGLGALVGA VVNQIANSLT
gnmzq18	121	YQILD SVTTVSAKARLVD SRNGKELWSGSASIREGSNNNSNGLGALVGA VVNQIANSLT
gnmzq26	121	YQILD SVTTVSAKARLVD SRNGKELWSGSASIREGSNNNSNGLGALVGA VVNQIANSLT
gnmzq09	181	DRGYQVSKTAAYNLLSPYSHNGILKGPRFVEEQPK*
gnmzq31	181	DRGYQVSKTAAYNLLSPYSHNGILKGPRFVEEQPK*
fa1090	181	DRGYQVSKTAAYNLLSPYSHNGILKGPRFVEEQPK*
gnmzq32	181	DRGYQVSKTAAYNLLSPYSHNGILKGPRFVEEQPK*
gnmzq33	181	DRGYQVSKTAAYNLLSPYSHNGILKGPRFVEEQPK*
gnmzq01	181	DRGYQVSKTAAYNLLSPYSHNGILKGPRFVEEQPK*
gnmzq05	181	DRGYQVSKTAAYNLLSPYSHNGILKGPRFVEEQPK*
gnmzq08	181	DRGYQVSKTAAYNLLSPYSHNGILKGPRFVEEQPK*
gnmzq02	181	DRGYQVSKTAAYNLLSPYSHNGILKGPRFVEEQPK*
gnmzq03	181	DRGYQVSKTAAYNLLSPYSHNGILKGPRFVEEQPK*
gnmzq04	181	DRGYQVSKTAAYNLLSPYSHNGILKGPRFVEEQPK*
gnmzq07	181	DRGYQVSKTAAYNLLSPYSHNGILKGPRFVEEQPK*
gnmzq10	181	DRGYQVSKTAAYNLLSPYSHNGILKGPRFVEEQPK*
gnmzq11	181	DRGYQVSKTAAYNLLSPYSHNGILKGPRFVEEQPK*
gnmzq13	181	DRGYQVSKTAAYNLLSPYSHNGILKGPRFVEEQPK*
gnmzq15	181	DRGYQVSKTAAYNLLSPYSHNGILKGPRFVEEQPK*
gnmzq16	181	DRGYQVSKTAAYNLLSPYSHNGILKGPRFVEEQPK*
gnmzq17	181	DRGYQVSKTAAYNLLSPYSHNGILKGPRFVEEQPK*
gnmzq19	181	DRGYQVSKTAAYNLLSPYSHNGILKGPRFVEEQPK*
gnmzq21	181	DRGYQVSKTAAYNLLSPYSHNGILKGPRFVEEQPK*
gnmzq22	181	DRGYQVSKTAAYNLLSPYSHNGILKGPRFVEEQPK*
gnmzq23	181	DRGYQVSKTAAYNLLSPYSHNGILKGPRFVEEQPK*
gnmzq24	181	DRGYQVSKTAAYNLLSPYSHNGILKGPRFVEEQPK*
gnmzq25	181	DRGYQVSKTAAYNLLSPYSHNGILKGPRFVEEQPK*
gnmzq27	181	DRGYQVSKTAAYNLLSPYSHNGILKGPRFVEEQPK*
gnmzq28	181	DRGYQVSKTAAYNLLSPYSHNGILKGPRFVEEQPK*
gnmzq29	181	DRGYQVSKTAAYNLLSPYSHNGILKGPRFVEEQPK*
z2491	181	DRGYQVSKTAAYNLLSPYSHNGILKGPRFVEEQPK*
gnmzq14	181	DRGYQVSKTAAYNLLSPYSHNGILKGPRFVEEQPK*
gnmzq18	181	DRGYQVSKTAAYNLLSPYSHNGILKGPRFVEEQPK*
gnmzq26	181	DRGYQVSKTAAYNLLSPYSHNGILKGPRFVEEQPK*

FIG. 20B

287_14	1	MFKRSVIAMACIFALSACGGGGGGSPDVKSADTLSKPAAPVVSE KETEA
287_2	1	MFKRSVIAMACIFALSACGGGGGGSPDVKSADTLSKPAAPVVSE KETEA
287_21	1	MFKRSVIAMACIFALSACGGGGGGSPDVKSADTLSKPAAPVVSE KETEA
z2491	1	MFKRSVIAMACIFALSACGGGGGGSPDVKSADTLSKPAAPVVSE KETEA
287_9	1	MFKRSVIAMACIVALSACGGGGGGSPDVKSADTLSKPAAPVVTEDVGEVLPKEKKDEEA
fa1090	1	MFKRSVIAMACIFPLSACGGGGGGSPDVKSADTPSKPAAPVVAENAGEGVLPKEKKDEEA
287_14	50	KEDAPQAGSQGOGAPSAQGGQDMAAVSEENTNGGAAATDKPKNEDEGAQNDMPQNAADT
287_2	50	KEDAPQAGSQGOGAPSAQGGQDMAAVSEENTNGGAAATDKPKNEDEGAQNDMPQNAADT
287_21	50	KEDAPQAGSQGOGAPSAQGSQDMAAVSEENTNGGAAVTADNPKNEDEVQNDMPQNAAGT
z2491	50	KEDAPQAGSQGOGAPSAQGSQDMAAVSEENTNGGAAVTADNPKNEDEVQNDMPQNAAGT
287_9	61	VSGAPQADT..QDATABKGQDMAAVSAENTNGGAATTDDNPENKDEGEQNDMPQNAADT
fa1090	61	AGGAPQADT..QDATABAGEGSQDMAAVSAENTNGGAATTDDNPKNEDAGAQNDMPQNAA..
287_14	110	DSSLTPNHTPASNMPAGNMENQAPDAGESEQPANQPDMANADGMQGDDPSAGGENAGNTA
287_2	110	DSSLTPNHTPASNMPAGNMENQAPDAGESEQPANQPDMANADGMQGDDPSAGGENAGNTA
287_21	110	DSSTPNHTPPDPNMLAGNMENQATDAGESQPANQPDMANADGMQGDDPSAGGENAGNTA
z2491	110	DSSTPNHTPPDPNMLAGNMENQATDAGESQPANQPDMANADGMQGDDPSAGGENAGNTA
287_9	119	DSSTPNHTPAPNMPTRDMGNQAPDAGESAQPANQPDMANADGMQGDDPSAGGENAGNTA
fa1090	117	
287_14	170	AQGTNQAENNQTAGSQNPASSSTNPSATNSGGDFGRTNVGNSVVIDGPSQNITLTHCKGDS
287_2	170	AQGTNQAENNQTAGSQNPASSSTNPSATNSGGDFGRTNVGNSVVIDGPSQNITLTHCKGDS
287_21	170	AQGANQAGNNQAGSSDPPIPASNPPAPANGGSNFGRVDIANGVVIDGPSQNITLTHCKGDS
z2491	170	AQGANQAGNNQAGSSDPPIPASNPPAPANGGSNFGRVDIANGVVIDGPSQNITLTHCKGDS
287_9	178	DQANQAEENNQVGGSQNPASSSTNPNATNGSDFGRINVANGEKIDSGSENMTLTHCKDKV
fa1090	117	.ESANQGTGNNQPGSSDSAPASNPPAPANGSDFGRTNVGNSVVIDGPSQNITLTHCKGDS
287_14	230	CSGNNFLDDEEVQLKSEFEKLSADAKISNYKKDGKNDKFVGLVADSQVMKGINQYII
287_2	230	CSGNNFLDDEEVQLKSEFEKLSADAKISNYKKDGKNDKFVGLVADSQVMKGINQYII
287_21	230	CSGNNFLDDEEVQLKSEFEKLSADAKISNYKKDGKNDKFVGLVADSQVMKGINQYII
z2491	230	CSGNNFLDDEEVQLKSEFEKLSADAKISNYKKDGKNDKFVGLVADSQVMKGINQYII
287_9	238	CDRD.FLDEEAPPKSEFEKLSDDEEKINKYKK...DEQRENFVGLVADRVEKNGTNKYII
fa1090	176	CNGDNLLDDEEAPS KSEFEKLSDEEKIKRYKK...DEQRENFVGLVADRVKKDGTNKYII
287_14	290	FYKPKP...SFARFRRSARSRSRSLPAEMPLIPVNQADTLIVDGEAVSLTGHSGNIFAPEG
287_2	290	FYKPKP...SFARFRRSARSRSRSLPAEMPLIPVNQADTLIVDGEAVSLTGHSGNIFAPEG
287_21	286	FYKPKP...SFARFRRSARSRSRSLPAEMPLIPVNQADTLIVDGEAVSLTGHSGNIFAPEG
z2491	286	FYKPKP...SFARFRRSARSRSRSLPAEMPLIPVNQADTLIVDGEAVSLTGHSGNIFAPEG
287_9	293	IYKDKSASSSARFRRSARSRSRSLPAEMPLIPVNQADTLIVDGEAVSLTGHSGNIFAPEG
fa1090	232	FYTDKPPT.....RSARSRSRSLPAEPLIPVNQADTLIVDGEAVSLTGHSGNIFAPEG
287_14	348	NYRYLTGYAEKLPGGSYALRVQGEPSKGEMLAGTAVNGEVLHFHTENGRPSPLGRFAA
287_2	348	NYRYLTGYAEKLPGGSYALRVQGEPSKGEMLAGTAVNGEVLHFHTENGRPSPLGRFAA
287_21	344	NYRYLTGYAEKLPGGSYALRVQGEPAKGEMLAGAAYNGEVLHFHTENGRPYPLGRFAA
z2491	344	NYRYLTGYAEKLPGGSYALRVQGEPAKGEMLAGAAYNGEVLHFHTENGRPYPLGRFAA
287_9	353	NYRYLTGYAEKLPGGSYALRVQGEPAKGEMLAGTAVNGEVLHFHMENGRPSPLGRFAA
fa1090	285	NYRYLTGYAEKLPGGSYALRVQGEPAKGEMLVGTAAYNGEVLHFHMENGRPYPLGRFAA
287_14	408	KVDFGSKSVDGIIDSGLHMGQTQFKAAIDGNFGKGTWTENGGDVSGFYGPAGEEEVA
287_2	408	KVDFGSKSVDGIIDSGLHMGQTQFKAAIDGNFGKGTWTENGGDVSGFYGPAGEEEVA
287_21	404	KVDFGSKSVDGIIDSGLHMGQTQFKAAIDGNFGKGTWTENGSDVSGFYGPAGEEEVA
z2491	404	KVDFGSKSVDGIIDSGLHMGQTQFKAAIDGNFGKGTWTENGSDVSGFYGPAGEEEVA
287_9	413	KVDFGSKSVDGIIDSGLHMGQTQFKAAIDGNFGKGTWTENGGDVSGFYGPAGEEEVA
fa1090	345	KVDFGSKSVDGIIDSGLHMGQTQFKAAIDGNFGKGTWTENGGDVSGFYGPAGEEEVA

FIG. 21A

287_14	468	GKYSYRPTDAEKGGFGVFA G KKEQD*
287_2	468	GKYSYRPTDAEKGGFGVFA G KKEQD*
287_21	464	GKYSYRPTDAEKGGFGVFA G KKEQD*
z2491	464	GKYSYRPTDAEKGGFGVFA G KKEQD*
287_9	473	GKYSYRPTDAEKGGFGVFA G KKEQD*
fa1090	405	GKYSYRPTDAEKGGFGVFA G KKEQD*

FIG. 21B

z2491_519	1	MEFFIILLAAVVVFGFKSFVVIPQQEHHVVERLGRFHRLTAGLNILIPFIDRVAYRHSL
zv26_519	1	MEFFIILLAAVVVFGFKSFVVIPQQEHHVVERLGRFHRLTAGLNILIPFIDRVAYRHSL
zv22_519ass	1	MEFFIILLAAVVVFGFKSFVVIPQQEHHVVERLGRFHRLTAGLNILIPFIDRVAYRHSL
fa1090_519	1	MEFFIILLAAVAVFGFKSFVVIPQQEHHVVERLGRFHRLTAGLNILIPFIDRVAYRHSL
zv32_519	1	MEFFIILLAAVAVFGFKSFVVIPQQEHHVVERLGRFHRLTAGLNILIPFIDRVAYRHSL
zv11_519	1	MEFFIILLAAVAVFGFKSFVVIPQQEHHVVERLGRFHRLTAGLNILIPFIDRVAYRHSL
zv28_519	1	MEFFIILLAAVAVFGFKSFVVIPQQEHHVVERLGRFHRLTAGLNILIPFIDRVAYRHSL
zv96_519	1	MEFFIILLAAVAVFGFKSFVVIPQQEHHVVERLGRFHRLTAGLNILIPFIDRVAYRHSL
zv02_519	1	MEFFIILLVAVAVFGFKSFVVIPQQEHHVVERLGRFHRLTAGLNILIPFIDRVAYRHSL
zv03_519	1	MEFFIILLVAVAVFGFKSFVVIPQQEHHVVERLGRFHRLTAGLNILIPFIDRVAYRHSL
zv04_519	1	MEFFIILLVAVAVFGFKSFVVIPQQEHHVVERLGRFHRLTAGLNILIPFIDRVAYRHSL
zv05_519	1	MEFFIILLVAVAVFGFKSFVVIPQQEHHVVERLGRFHRLTAGLNILIPFIDRVAYRHSL
zv01_519	1	MEFFIILLVAVAVFGFKSFVVIPQQEHHVVERLGRFHRLTAGLNILIPFIDRVAYRHSL
zv07_519	1	MEFFIILLVAVAVFGFKSFVVIPQQEHHVVERLGRFHRLTAGLNILIPFIDRVAYRHSL
zv12_519	1	MEFFIILLVAVAVFGFKSFVVIPQQEHHVVERLGRFHRLTAGLNILIPFIDRVAYRHSL
zv18_519	1	MEFFIILLVAVAVFGFKSFVVIPQQEHHVVERLGRFHRLTAGLNILIPFIDRVAYRHSL
zv19_519	1	MEFFIILLVAVAVFGFKSFVVIPQQEHHVVERLGRFHRLTAGLNILIPFIDRVAYRHSL
zv21_519ass	1	MEFFIILLVAVAVFGFKSFVVIPQQEHHVVERLGRFHRLTAGLNILIPFIDRVAYRHSL
zv27_519	1	MEFFIILLVAVAVFGFKSFVVIPQQEHHVVERLGRFHRLTAGLNILIPFIDRVAYRHSL
zv20_519ass	1	MEFFIILLVAVAVFGFKSFVVIPQQEHHVVERLGRFHRLTAGLNILIPFIDRVAYRHSL
zv06_519ass	1	MEFFIILLVAVAVFGFKSFVVIPQQEHHVVERLGRFHRLTAGLNILIPFIDRVAYRHSL
zv29_519ass	1	MEFFIILLAAVAVFGFKSFVVIPQQEHHVVERLGRFHRLTAGLNILIPFIDRVAYRHSL

z2491_519	61	KEIPLDVPSQVCITRDNTQLTVGDIIYFQVTDPKLASYGSSNYIMAITQLAQTTLRSVIG
zv26_519	61	KEIPLDVPSQVCITRDNTQLTVGDIIYFQVTDPKLASYGSSNYIMAITQLAQTTLRSVIG
zv22_519ass	61	KEIPLDVPSQVCITRDNTQLTVGDIIYFQVTDPKLASYGSSNYIMAITQLAQTTLRSVIG
fa1090_519	61	KEIPLDVPSQVCITRDNTQLTVGDIIYFQVTDPKLASYGSSNYIMAITQLAQTTLRSVIG
zv32_519	61	KEIPLDVPSQVCITRDNTQLTVGDIIYFQVTDPKLASYGSSNYIMAITQLAQTTLRSVIG
zv11_519	61	KEIPLDVPSQVCITRDNTQLTVGDIIYFQVTDPKLASYGSSNYIMAITQLAQTTLRSVIG
zv28_519	61	KEIPLDVPSQVCITRDNTQLTVGDIIYFQVTDPKLASYGSSNYIMAITQLAQTTLRSVIG
zv96_519	61	KEIPLDVPSQVCITRDNTQLTVGDIIYFQVTDPKLASYGSSNYIMAITQLAQTTLRSVIG
zv02_519	61	KEIPLDVPSQVCITRDNTQLTVGDIIYFQVTDPKLASYGSSNYIMAITQLAQTTLRSVIG
zv03_519	61	KEIPLDVPSQVCITRDNTQLTVGDIIYFQVTDPKLASYGSSNYIMAITQLAQTTLRSVIG
zv04_519	61	KEIPLDVPSQVCITRDNTQLTVGDIIYFQVTDPKLASYGSSNYIMAITQLAQTTLRSVIG
zv05_519	61	KEIPLDVPSQVCITRDNTQLTVGDIIYFQVTDPKLASYGSSNYIMAITQLAQTTLRSVIG
zv01_519	61	KEIPLDVPSQVCITRDNTQLTVGDIIYFQVTDPKLASYGSSNYIMAITQLAQTTLRSVIG
zv07_519	61	KEIPLDVPSQVCITRDNTQLTVGDIIYFQVTDPKLASYGSSNYIMAITQLAQTTLRSVIG
zv12_519	61	KEIPLDVPSQVCITRDNTQLTVGDIIYFQVTDPKLASYGSSNYIMAITQLAQTTLRSVIG
zv18_519	61	KEIPLDVPSQVCITRDNTQLTVGDIIYFQVTDPKLASYGSSNYIMAITQLAQTTLRSVIG
zv19_519	61	KEIPLDVPSQVCITRDNTQLTVGDIIYFQVTDPKLASYGSSNYIMAITQLAQTTLRSVIG
zv21_519ass	61	KEIPLDVPSQVCITRDNTQLTVGDIIYFQVTDPKLASYGSSNYIMAITQLAQTTLRSVIG
zv27_519	61	KEIPLDVPSQVCITRDNTQLTVGDIIYFQVTDPKLASYGSSNYIMAITQLAQTTLRSVIG
zv20_519ass	61	KEIPLDVPSQVCITRDNTQLTVGDIIYFQVTDPKLASYGSSNYIMAITQLAQTTLRSVIG
zv06_519ass	61	KEIPLDVPSQVCITRDNTQLTVGDIIYFQVTDPKLASYGSSNYIMAITQLAQTTLRSVIG
zv29_519ass	61	KEIPLDVPSQVCITRDNTQLTVGDIIYFQVTDPKLASYGSSNYIMAITQLAQTTLRSVIG

z2491_519	121	RMELDKTFEERDEINSTVVVSALDEAAGAWGVKVLRYEIKDLVPPQEILRSMQAQITAERE
zv26_519	121	RMELDKTFEERDEINSTVVAALDEAAGAWGVKVLRYEIKDLVPPQEILRSMQAQITAERE
zv22_519ass	121	RMELDKTFEERDEINSTVVVSALDEAAGAWGVKVLRYEIKDLVPPQEILRSMQAQITAERE
fa1090_519	121	RMELDKTFEERDEINSTVVVSALDEAAGAWGVKVLRYEIKDLVPPQEILRSMQAQITAERE
zv32_519	121	RMELDKTFEERDEINSTVVVSALDEAAGAWGVKVLRYEIKDLVPPQEILRSMQAQITAERE
zv11_519	121	RMELDKTFEERDEINSTVVAALDEAAGAWGVKVLRYEIKDLVPPQEILRSMQAQITAERE
zv28_519	121	RMELDKTFEERDEINSTVVAALDEAAGAWGVKVLRYEIKDLVPPQEILRSMQAQITAERE
zv96_519	121	RMELDKTFEERDEINSTVVAALDEAAGAWGVKVLRYEIKDLVPPQEILRSMQAQITAERE
zv02_519	121	RMELDKTFEERDEINSTVVVSALDEAAGAWGVKVLRYEIKDLVPPQEILRSMQAQITAERE
zv03_519	121	RMELDKTFEERDEINSTVVVSALDEAAGAWGVKVLRYEIKDLVPPQEILRSMQAQITAERE
zv04_519	121	RMELDKTFEERDEINSTVVVSALDEAAGAWGVKVLRYEIKDLVPPQEILRSMQAQITAERE
zv05_519	121	RMELDKTFEERDEINSTVVAALDEAAGAWGVKVLRYEIKDLVPPQEILRSMQAQITAERE
zv01_519	121	RMELDKTFEERDEINSTVVAALDEAAGAWGVKVLRYEIKDLVPPQEILRSMQAQITAERE
zv07_519	121	RMELDKTFEERDEINSTVVAALDEAAGAWGVKVLRYEIKDLVPPQEILRSMQAQITAERE
zv12_519	121	RMELDKTFEERDEINSTVVAALDEAAGAWGVKVLRYEIKDLVPPQEILRSMQAQITAERE
zv18_519	121	RMELDKTFEERDEINSTVVAALDEAAGAWGVKVLRYEIKDLVPPQEILRSMQAQITAERE
zv19_519	121	RMELDKTFEERDEINSTVVAALDEAAGAWGVKVLRYEIKDLVPPQEILRSMQAQITAERE
zv21_519ass	121	RMELDKTFEERDEINSTVVAALDEAAGAWGVKVLRYEIKDLVPPQEILRSMQAQITAERE
zv27_519	121	RMELDKTFEERDEINSTVVAALDEAAGAWGVKVLRYEIKDLVPPQEILRSMQAQITAERE
zv20_519ass	121	RMELDKTFEERDEINSTVVAALDEAAGAWGVKVLRYEIKDLVPPQEILRSMQAQITAERE
zv06_519ass	121	RMELDKTFEERDEINSTVVAALDEAAGAWGVKVLRYEIKDLVPPQEILRSMQAQITAERE
zv29_519ass	121	RMELDKTFEERDEINSTVVAALDEAAGAWGVKVLRYEIKDLVPPQEILRSMQAQITAERE

FIG. 22A

z2491_519	181	KRARIAESEGRKIEQINLASGQREAEIQQSEGEAQAAVNASNAEKIARINRAKGEAESLR
zv26_519	181	KRARIAESEGRKIEQINLASGQREAEIQQSEGEAQAAVNASNAEKIARINRAKGEAESLR
zv22_519ass	181	KRARIAESEGRKIEQINLASGQREAKIQQSEGEAQAAVNASNAEKIARINRAKGEAESLR
fa1090_519	181	KRARIAESEGRKIEQINLASGQREAEIQQSEGEAQAAVNASNAEKIARINRAKGEAESLR
zv32_519	181	KRARIAESEGRKIEQINLASGQREAEIQQSEGEAQAAVNASNAEKIARINRAKGEAESLR
zv11_519	181	KRARIAESEGRKIEQINLASGQREAEIQQSEGEAQAAVNASNAEKIARINRAKGEAESLR
zv28_519	181	KRARIAESEGRKIEQINLASGQREAEIQQSEGEAQAAVNASNAEKIARINRAKGEAESLR
zv96_519	181	KRARIAESEGRKIEQINLASGQREAEIQQSEGEAQAAVNASNAEKIARINRAKGEAESLR
zv02_519	181	KRARIAESEGRKIEQINLASGQREAEIQQSEGEAQAAVNASNAEKIARINRAKGEAESLR
zv03_519	181	KRARIAESEGRKIEQINLASGQREAEIQQSEGEAQAAVNASNAEKIARINRAKGEAESLR
zv04_519	181	KRARIAESEGRKIEQINLASGQREAEIQQSEGEAQAAVNASNAEKIARINRAKGEAESLR
zv05_519	181	KRARIAESEGRKIEQINLASGQREAEIQQSEGEAQAAVNASNAEKIARINRAKGEAESLR
zv01_519	181	KRARIAESEGRKIEQINLASGQREAEIQQSEGEAQAAVNASNAEKIARINRAKGEAESLR
zv07_519	181	KRARIAESEGRKIEQINLASGQREAEIQQSEGEAQAAVNASNAEKIARINRAKGEAESLR
zv12_519	181	KRARIAESEGRKIEQINLASGQREAEIQQSEGEAQAAVNASNAEKIARINRAKGEAESLR
zv18_519	181	KRARIAESEGRKIEQINLASGQREAEIQQSEGEAQAAVNASNAEKIARINRAKGEAESLR
zv19_519	181	KRARIAESEGRKIEQINLASGQREAEIQQSEGEAQAAVNASNAEKIARINRAKGEAESLR
zv21_519ass	181	KRARIAESEGRKIEQINLASGQREAEIQQSEGEAQAAVNASNAEKIARINRAKGEAESLR
zv27_519	181	KRARIAESEGRKIEQINLASGQREAEIQQSEGEAQAAVNASNAEKIARINRAKGEAESLR
zv20_519ass	181	KRARIAESEGRKIEQINLASGQREAEIQQSEGEAQAAVNASNAEKIARINRAKGEAESLR
zv06_519ass	181	KRARIAESEGRKIEQINLASGQREAEIQQSEGEAQAAVNASNAEKIARINRAKGEAESLR
zv29_519ass	181	KRARIAESEGRKIEQINLASGQREAEIQQSEGEAQAAVNASNAEKIARINRAKGEAESLR

z2491_519	241	LVAEANAEAIRQIAAAALQTQGGADAVNLKIAEQYVAFFNNLAKESNTLIMPANVADIGSL
zv26_519	241	LVAEANAEAIRQIAAAALQTQGGADAVNLKIAEQYVAFFNNLAKESNTLIMPANVADIGSL
zv22_519ass	241	LVAEANAEAIRQIAAAALQTQGGADAVNLKIAEQYVAFFNNLAKESNTLIMPANVADIGSL
fa1090_519	241	LVAEANAEAIRQIAAAALQTQGGADAVNLKIAEQYVAFFNNLAKESNTLIMPANVADIGSL
zv32_519	241	LVAEANAEAIRQIAAAALQTQGGADAVNLKIAEQYVAFFNNLAKESNTLIMPANVADIGSL
zv11_519	241	LVAEANAEAIRQIAAAALQTQGGADAVNLKIAEQYVAFFNNLAKESNTLIMPANVADIGSL
zv28_519	241	LVAEANAEAIRQIAAAALQTQGGADAVNLKIAEQYVAFFNNLAKESNTLIMPANVADIGSL
zv96_519	241	LVAEANAEAIRQIAAAALQTQGGADAVNLKIAEQYVAFFNNLAKESNTLIMPANVADIGSL
zv02_519	241	LVAEANAEAIRQIAAAALQTQGGADAVNLKIAEQYVAFFNNLAKESNTLIMPANVADIGSL
zv03_519	241	LVAEANAEAIRQIAAAALQTQGGADAVNLKIAEQYVAFFNNLAKESNTLIMPANVADIGSL
zv04_519	241	LVAEANAEAIRQIAAAALQTQGGADAVNLKIAEQYVAFFNNLAKESNTLIMPANVADIGSL
zv05_519	241	LVAEANAEAIRQIAAAALQTQGGADAVNLKIAEQYVAFFNNLAKESNTLIMPANVADIGSL
zv01_519	241	LVAEANAEAIRQIAAAALQTQGGADAVNLKIAEQYVAFFNNLAKESNTLIMPANVADIGSL
zv07_519	241	LVAEANAEAIRQIAAAALQTQGGADAVNLKIAEQYVAFFNNLAKESNTLIMPANVADIGSL
zv12_519	241	LVAEANAEAIRQIAAAALQTQGGADAVNLKIAEQYVAFFNNLAKESNTLIMPANVADIGSL
zv18_519	241	LVAEANAEAIRQIAAAALQTQGGADAVNLKIAEQYVAFFNNLAKESNTLIMPANVADIGSL
zv19_519	241	LVAEANAEAIRQIAAAALQTQGGADAVNLKIAEQYVAFFNNLAKESNTLIMPANVADIGSL
zv21_519ass	241	LVAEANAEAIRQIAAAALQTQGGADAVNLKIAEQYVAFFNNLAKESNTLIMPANVADIGSL
zv27_519	241	LVAEANAEAIRQIAAAALQTQGGADAVNLKIAEQYVAFFNNLAKESNTLIMPANVADIGSL
zv20_519ass	241	LVAEANAEAIRQIAAAALQTQGGADAVNLKIAEQYVAFFNNLAKESNTLIMPANVADIGSM
zv06_519ass	241	LVAEANAEAIRQIAAAALQTQGGADAVNLKIAEQYVAFFNNLAKESNTLIMPANVADIGSL
zv29_519ass	241	LVAEANAEAIRQIAAAALQTQGGADAVNLKIAEQYVAFFNNLAKESNTLIMPANVADIGSL

z2491_519	301	ISAGMKIIDSSKTAK*
zv26_519	301	ISAGMKIIDSSKTAK*
zv22_519ass	301	ISAGMKIIDSSKTAK*
fa1090_519	301	ISAGMKIIDSSKTAK*
zv32_519	301	ISAGMKIIDSSKTAK*
zv11_519	301	ISAGMKIIDSSKTAK*
zv28_519	301	ISAGMKIIDSSKTAK*
zv96_519	301	ISAGMKIIDSSKTAK*
zv02_519	301	ISAGMKIIDSSKTAK*
zv03_519	301	ISAGMKIIDSSKTAK*
zv04_519	301	ISAGMKIIDSSKTAK*
zv05_519	301	ISAGMKIIDSSKTAK*
zv01_519	301	ISAGMKIIDSSKTAK*
zv07_519	301	ISAGMKIIDSSKTAK*
zv12_519	301	ISAGMKIIDSSKTAK*
zv18_519	301	ISAGMKIIDSSKTAK*
zv19_519	301	ISAGMKIIDSSKTAK*
zv21_519ass	301	ISAGMKIIDSSKTAK*
zv27_519	301	ISAGMKIIDSSKTAK*
zv20_519ass	301	ISAGMKIIDSSKTAK*
zv06_519ass	301	ISAGMKIIDSSKTAK*
zv29_519ass	301	ISAGMKIIDSSKTAK*

FIG. 22B

FIG. 23A

FIG. 23B

FIG. 23C

fa1090	361	EDRHYITLGAPLFVATAHPVTRKALNRLLIMAQDTGSAIKGAVRVDYFWGYGDEAGELAGK
zm33asbc	361	EDRHYITLGAPLFVATAHPVTRKALNRLLIMAQDTGSAIKGAVRVDYFWGYGDEAGELAGK
zm32asbc	361	EDRHYITLGAPLFVATAHPVTRKALNRLLIMAQDTGSAIKGAVRVDYFWGYGDEAGELAGK
zm23asbc	361	VDRHYITLGAPLFVATAHPVTRKALNRLLIMAQDTGSAIKGAVRVDYFWGYGDEAGELAGK
zm27bc	361	VDRHYITLGAPLFVATAHPVTRKALNRLLIMAQDTGSAIKGAVRVDYFWGYGDEAGELAGK
zm09	361	VDRHYITLGAPLFVATAHPVTRKALNRLLIMAQDTGSAIKGAVRVDYFWGYGDEAGELAGK
zm10	361	VDRHYITLGAPLFVATAHPVTRKALNRLLIMAQDTGSAIKGAVRVDYFWGYGDEAGELAGK
zm24	361	VDRHYITLGAPLFVATAHPVTRKALNRLLIMAQDTGSAIKGAVRVDYFWGYGDEAGELAGK
zm25	361	VDRHYITLGAPLFVATAHPVTRKALNRLLIMAQDTGSAIKGAVRVDYFWGYGDEAGELAGK
zm14	361	VDRHYITLGAPLFVATAHPVTRKALNRLLIMAQDTGSAIKGAVRVDYFWGYGDEAGELAGK
zm04	361	VDRHYITLGAPLFVATAHPVTRKALNRLLIMAQDTGSAIKGAVRVDYFWGYGDEAGELAGK
zm11asbc	361	VDRHYITLGAPLFVATAHPVTRKALNRLLIMAQDTGSAIKGAVRVDYFWGYGDEAGELAGK
zm08n	361	VDRHYITLGAPLFVATAHPVTRKALNRLLIMAQDTGSAIKGAVRVDYFWGYGDEAGELAGK
zm96	361	VDRHYITLGAPLFVATAHPVTRKALNRLLIMAQDTGSAIKGAVRVDYFWGYGDEAGELAGK
zm01	361	VDRHYITLGAPLFVATAHPVTRKALNRLLIMAQDTGSAIKGAVRVDYFWGYGDEAGELAGK
zm02	361	VDRHYITLGAPLFVATAHPVTRKALNRLLIMAQDTGSAIKGAVRVDYFWGYGDEAGELAGK
zm03	361	VDRHYITLGAPLFVATAHPVTRKALNRLLIMAQDTGSAIKGAVRVDYFWGYGDEAGELAGK
zm07	361	VDRHYITLGAPLFVATAHPVTRKALNRLLIMAQDTGSAIKGAVRVDYFWGYGDEAGELAGK
zm12	361	VDRHYITLGAPLFVATAHPVTRKALNRLLIMAQDTGSAIKGAVRVDYFWGYGDEAGELAGK
zm18	361	VDRHYITLGAPLFVATAHPVTRKALNRLLIMAQDTGSAIKGAVRVDYFWGYGDEAGELAGK
zm19	361	VDRHYITLGAPLFVATAHPVTRKALNRLLIMAQDTGSAIKGAVRVDYFWGYGDEAGELAGK
zm20	361	VDRHYITLGAPLFVATAHPVTRKALNRLLIMAQDTGSAIKGAVRVDYFWGYGDEAGELAGK
zm21	361	VDRHYITLGAPLFVATAHPVTRKALNRLLIMAQDTGSAIKGAVRVDYFWGYGDEAGELAGK
zm06	361	VDRHYITLGAPLFVATAHPVTRKALNRLLIMAQDTGSAIKGAVRVDYFWGYGDEAGELAGK
zm17	361	VDRHYITLGAPLFVATAHPVTRKALNRLLIMAQDTGSAIKGAVRVDYFWGYGDEAGELAGK
zm13	361	VDRHYITLGAPLFVATAHPVTRKALNRLLIMAQDTGSAIKGAVRVDYFWGYGDEAGELAGK
zm05	361	VDRHYITLGAPLFVATAHPVTRKALNRLLIMAQDTGSAIKGAVRVDYFWGYGDEAGELAGK
z2491	361	VDRHYITLGAPLFVATAHPVTRKALNRLLIMAQDTGSAIKGAVRVDYFWGYGDEAGELAGK
zm22	361	VDRHYITLGAPLFVATAHPVTRKALNRLLIMAQDTGSAIKGAVRVDYFWGYGDEAGELAGK
zm26	361	VDRHYITLGAPLFVATAHPVTRKALNRLLIMAQDTGSAIKGAVRVDYFWGYGDEAGELAGK
zm28	361	VDRHYITLGAPLFVATAHPVTRKALNRLLIMAQDTGSAIKGAVRVDYFWGYGDEAGELAGK
zm29asbc	361	VDRHYITLGAPLFVATAHPVTRKALNRLLIMAQDTGSAIKGAVRVDYFWGYGDEAGELAGK
zm16	361	VDRHYITLGAPLFVATAHPVTRKALNRLLIMAQDTGSAIKGAVRVDYFWGYGDEAGELAGK
zm15	361	VDRHYITLGAPLFVATAHPVTRKALNRLLIMAQDTGSAIKGAVRVDYFWGYGDEAGELAGK
zm31asbc	361	VDRHYITLGAPLFVATAHPVTRKALNRLLIMAQDTGSAIKGAVRVDYFWGYGDEAGELAGK
fa1090	421	QKTTGYVWQLLPNGMKPEYRP*
zm33asbc	421	QKTTGYVWQLLPNGMKPEYRP*
zm32asbc	421	QKTTGYVWQLLPNGMKPEYRP*
zm23asbc	421	MKEPGYVWQLLPNGMKPEYRP*
zm27bc	421	MKEPGYVWQLLPNGMKPEYRP*
zm09	421	QKTTGYVWQLLPNGMKPEYRP*
zm10	421	QKTTGYVWQLLPNGMKPEYRP*
zm24	421	QKTTGYVWQLLPNGMKPEYRP*
zm25	421	QKTTGYVWQLLPNGMKPEYRP*
zm14	421	QKTTGYVWQLLPNGMKPEYRP*
zm04	421	QKTTGYVWQLLPNGMKPEYRP*
zm11asbc	421	QKTTGYVWQLLPNGMKPEYRP*
zm08n	421	QKTTGYVWQLLPNGMKPEYRP*
zm96	421	QKTTGYVWQLLPNGMKPEYRP*
zm01	421	QKTTGYVWQLLPNGMKPEYRP*
zm02	421	QKTTGYVWQLLPNGMKPEYRP*
zm03	421	QKTTGYVWQLLPNGMKPEYRP*
zm07	421	QKTTGYVWQLLPNGMKPEYRP*
zm12	421	QKTTGYVWQLLPNGMKPEYRP*
zm18	421	QKTTGYVWQLLPNGMKPEYRP*
zm19	421	QKTTGYVWQLLPNGMKPEYRP*
zm20	421	QKTTGYVWQLLPNGMKPEYRP*
zm21	421	QKTTGYVWQLLPNGMKPEYRP*
zm06	421	QKTTGYVWQLLPNGMKPEYRP*
zm17	421	QKTTGYVWQLLPNGMKPEYRP*
zm13	421	QKTTGYVWQLLPNGMKPEYRP*
zm05	421	QKTTGYVWQLLPNGMKPEYRP*
z2491	421	QKTTGYVWQLLPNGMKPEYRP*
zm22	421	QKTTGYVWQLLPNGMKPEYRP*
zm26	421	QKTTGYVWQLLPNGMKPEYRP*
zm28	421	QKTTGYVWQLLPNGMKPEYRP*
zm29asbc	421	QKTTGYVWQLLPNGMKPEYRP*
zm16	421	QKTTGYVWQLLPNGMKPEYRP*
zm15	421	QKTTGYVWQLLPNGMKPEYRP*
zm31asbc	421	QKTTGYVWQLLPNGMKPEYRP*

FIG. 23D

INTERNATIONAL SEARCH REPORT

In International Application No
PCT/99/09346

A. CLASSIFICATION OF SUBJECT MATTER
 IPC 6 C12N15/31 C07K14/22 C07K16/12 C12Q1/68 A61K39/095
 G01N33/50

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 6 C12N C07K C12Q A61K G01N

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>DATABASE TREMBL [Online] EMBL ID Q55666, AC Q55666, 1 November 1996 (1996-11-01) TABATA S: "Membrane-bound lytic transglycosylase A MltA Synechocystis sp. strain PCC 6803" XP002130156 Note: 100% aa seq identity of aa 342-350 with aa 392-400 of SEQ ID NOS 2790 and 2792, 27.6% (26.9%) aa seq identity with SEQ ID NO:2790 (2792) in 370 (387) aa overlap. the whole document</p> <p>---</p> <p>-/-</p>	1, 4-6, 9, 12

Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

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- "L" document which may throw doubts on priority, claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

- "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- "V" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- "S" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
26 May 2000	15.06.00
Name and mailing address of the ISA European Patent Office, P.O. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Authorized officer van de Kamp, M

INTERNATIONAL SEARCH REPORT

In Int'l Application No
PCT/US 99/09346

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

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X	EP 0 818 465 A (BIOLOG MOLECULAIRE DES PLANTES ; INST OF MOLECULAR BIOTECHNOLOGY (DE) 14 January 1998 (1998-01-14) Note: 100% nt seq identity of nt 367951-367961 of SEQ ID NO:1 with nt 163-173 of SEQ ID NO:2789. page 108 ---	8,11,12
A	LOMMATZSCH J ET AL.: "Outer membrane localization of murein hydrolases: MltA, a third lipoprotein lytic transglycosylase in Escherichia coli" JOURNAL OF BACTERIOLOGY, vol. 179, no. 17, September 1997 (1997-09), pages 5465-5470, XP002130154 Note: 33.7% (35.7%) aa seq identity with SEQ ID NO:2790 (2792) in 273 (207) aa overlap. abstract ---	1-12
A	DILLARD J P ET AL.: "A peptidoglycan hydrolase similar to bacteriophage endolysins acts as an autolysin in Neisseria gonorrhoeae" MOLECULAR MICROBIOLOGY, vol. 25, no. 5, September 1997 (1997-09), pages 893-901, XP000878964 abstract ---	1-12
A	WO 96 29412 A (IAF BIO VAC INC ; BRODEUR BERNARD R (CA); MARTIN DENIS (CA); HAMEL) 26 September 1996 (1996-09-26) cited in the application the whole document examples 1-12 ---	1-18
A	WO 94 08013 A (OREGON STATE) 14 April 1994 (1994-04-14) the whole document examples 1-7 ---	1-18
A	WO 92 13871 A (UNIV WASHINGTON) 20 August 1992 (1992-08-20) the whole document examples 1-10 ---	1-18
A	BLAKE M S ET AL.: "Vaccines for gonorrhoea: where are we on the curve?" TRENDS IN MICROBIOLOGY, vol. 3, no. 12, December 1995 (1995-12), pages 469-474, XP000876514 the whole document ---	1-18
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Int'l Application No

Fr 99/09346

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	POOLMAN J T: "Development of a meningococcal vaccine" INFECTIOUS AGENTS AND DISEASE, vol. 4, no. 1, March 1995 (1995-03), pages 13-28, XP000876540 the whole document ---	1-18
X	WO 96 01901 A (RHONE POULENC RORER SA ;BLANC VERONIQUE (FR); THIBAUT DENIS (FR);) 25 January 1996 (1996-01-25) Note: 100% nt seq ident of bp 170-156 of SEQ ID NO:1 (rev DNA) with bp 202-216 of SEQ ID NO:1 (61.2% in 348 bp overlap), 40.7% seq ident of transl SEQ ID NO:1 with SEQ ID NO:2 in 118 aa overlap. page 102-104 example 1 ---	8,11,12
X	WO 97 37044 A (ASTRA AB ;ALM RICHARD A (US); SMITH DOUGLAS (US)) 9 October 1997 (1997-10-09) Note: 100% aa seq identity of aa 204-211, 186-193 & 352-359 of transl SEQ ID NOS 227, 345 & 1003, resp., with aa 59-66 of SEQ ID NO:2, 37.4% aa seq identity with SEQ ID NO:2 in 115 aa overlap. page 268-269 page 344 page 909-910 page 23, paragraph B.4 ---	4,12-14
X	DATABASE SWISSPROT [Online] ID YPCP_YEREN, AC P31485, 1 July 1993 (1993-07-01) BAEUMLER A J ET AL.: "Hypothetical 29.6 kD protein in PCP 5' region (ORF1)" XP002138650 Note: 100% aa seq identity of aa 148-159 with aa 140-151 of SEQ ID NO:442, 43.4% aa seq identity with SEQ ID NO:442 in 256 aa overlap. the whole document -& BAUMLER A J ET AL.: "A lipoprotein of Yersinia enterocolitica facilitates ferrioxamine uptake in Escherichia coli" JOURNAL OF BACTERIOLOGY, vol. 174, no. 3, February 1992 (1992-02), pages 1029-1035, XP000907295 page 1031, left-hand column, line 11 -right-hand column, line 15 ---	4,12
A	-/-	4,12

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Int'l Application No
PCT/US99/09346

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>DATABASE SWISSPROT [Online] ID YDHH_HAEIN, AC P44861, 1 November 1995 (1995-11-01) FLEISCHMANN R D ET AL.: "Hypothetical protein HI0753" XP002138651 Note: 100% aa seq identity of aa 143-156 with aa 140-153 of SEQ ID NO:442, 41.6% aa seq identity with SEQ ID NO:442 in 377 aa overlap. the whole document</p> <p>---</p>	4,12
X	<p>WO 96 33276 A (HUMAN GENOME SCIENCES INC ;UNIV JOHNS HOPKINS (US)) 24 October 1996 (1996-10-24) Note: 100% nt seq identity of bp 816794-816807 with bp 289-302 of SEQ ID NO:441 (54.3% in 484 bp overlap), 100% aa seq identity of translated sequence with SEQ ID NO:442 in 14 aa overlap. page 77.488 Note: 100% nt seq identity of bp 230516-230526 with bp 1501-1511 of SEQ ID NO:489 (57.4% in 1292 bp overlap), 100% aa seq identity of translated sequence with SEQ ID NO:490 in 13 aa overlap. page 77.139 page 76.37, line HI0215 Note: 100% nt seq identity of bp 1025409-1025418 with bp 1339-1330 (rev strand) of SEQ ID NO:1201 (72.0% in 50 bp overlap). page 77.612</p> <p>---</p>	4,8, 11-14
X	<p>CONLIN C A ET AL.: "Escherichia coli prlC encodes an endopeptidase and is homologous to the <i>Salmonella typhimurium opdA</i> gene" JOURNAL OF BACTERIOLOGY, vol. 174, no. 18, September 1992 (1992-09), pages 5881-5997, XP000907300 Note: 100% nt seq ident of bp 1824-1837 with bp 1480-1493 of SEQ ID NO:489 (59.7% in 1282 bp overlap), 100% aa seq ident of aa 495-507 with aa 492-504 of SEQ ID NO:490 (49.5% in 679 aa overlap). abstract figure 2</p> <p>---</p> <p>-/-</p>	4,8,11, 12

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In Application No
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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>DATABASE SWISSPROT [Online] ID OPDA_HAEIN, AC P44573, 1 November 1995 (1995-11-01) FLEISCHMANN R D ET AL.: "Oligopeptidase A (EC 3.4.24.70)" XP002138652 Note: 100% aa seq identity of aa 496-508 with aa 492-504 of SEQ ID NO:490, 49.0% aa seq identity in 677 aa overlap. the whole document ---</p>	4,12
X	<p>ROKBI B ET AL.: "Evaluation of recombinant transferrin - binding protein B variants from Neisseria meningitidis for their ability to induce cross-reactive and bactericidal antibodies against a genetically diverse collection of serogroup B strains." INFECTION AND IMMUNITY, vol. 65, no. 1, January 1997 (1997-01), pages 55-63, XP002138643 abstract</p>	5
P,A	<p>DATABASE TREMBL [Online] EMBL ID 069750, AC 069750, 1 August 1998 (1998-08-01) ROKBI B ET AL.: "Transferrin binding protein B, TbpB, Neisseria meningitidis" XP002138653 Note: 22.3% aa seq identity with SEQ ID NO:1202 in 488 aa overlap. the whole document - & ROKBI B ET AL.: "Heterogeneity of tbpB, the transferrin-binding protein B gene, among serogroup B Neisseria meningitidis strains of the ET-5 complex" CLINICAL AND DIAGNOSTIC LABORATORY IMMUNOLOGY, vol. 4, no. 5, September 1997 (1997-09), pages 522-529, XP002138644 abstract</p>	4,8, 12-15,17
A	<p>--- -/-</p>	5,8, 12-15,17

INTERNATIONAL SEARCH REPORT

International Application No
PCT/EP 99/09346

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	<p>DATABASE GCG_GENESEQ [Online] ID W14640, AC_W14640, 5 March 1998 (1998-03-05) QUENTIN-MILLET M J ET AL.: "N. meningitidis HTR Tbp2 (del3777-385, del407-465, del488-508)" XP002138654 Note: 23.5% aa seq identity with SEQ ID NO:1202 in 571 aa overlap. the whole document</p>	4,8, 12-15,17
A	<p>-& WO 97 13860 A (PASTEUR MERIEUX SERUMS VACC; QUENTIN MILLET MARIE JOSE (FR); ROKBI)) 17 April 1997 (1997-04-17) claim 11</p>	4,8, 12-15,17
X	<p>----- DATABASE EMPR01 [Online] EMBL ID AF034831, AC AF034831, 4 December 1997 (1997-12-04) YOU Z ET AL.: "Rhizobium etli stomatin like protein (slp) gene, complete cds." XP002138655 Note: 100% nt seq ident of bp 4384-4395 with bp 529-540 of SEQ ID NO:1455 (54.4% in 638 bp overlap), 100% aa seq ident of aa 1394-1403 with aa 109-118 of SEQ ID NO:1456 (41.2% in 182 aa overlap). the whole document</p>	4,8,11, 12
P,X	<p>-& YOU Z ET AL.: "A stomatin-like protein encoded by the slp gene of Rhizobium etli is required for nodulation competitiveness on the common bean" MICROBIOLOGY, vol. 144, no. 9, September 1998 (1998-09), pages 2619-2627, XP000907294 abstract figure 2</p>	4,8,11, 12
X	<p>----- HUANG M ET AL.: "A stomatin-like protein necessary for mechanosensation in C. elegans" NATURE, vol. 378, no. 6554, 16 November 1995 (1995-11-16), pages 292-295, XP002138646 Note: 100% aa seq identity of aa 233-239 with aa 110-117 of SEQ ID NO:1456, 29.9% aa seq identity in 234 aa overlap. abstract figure 1</p>	4,12
	<p>----- -/-</p>	

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Int'l Application No
PCT/US99/09346

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>WONG C Y ET AL.: "Cloning and characterization of two immunophilin-like genes, ilpA and fkpA, on a single 3.9-kilobase fragment of <i>Aeromonas hydrophila</i> genomic DNA" <i>JOURNAL OF BACTERIOLOGY</i>, vol. 179, no. 11, June 1997 (1997-06), pages 3397-3403, XP002138647 Note: 100% nt seq ident of bp 2659-2672 with bp 613-626 of SEQ ID NO:1745 (59.2% in 655 bp overlap), 100% aa seq ident of aa 205-216 with aa 200-211 of SEQ ID NO:1746 (44.9% in 265 aa overlap). abstract figure 2</p> <p>---</p>	4,8, 11-14
X	<p>DATABASE EMPR02 [Online] EMBL ID NE01198, AC U001198, 23 November 1993 (1993-11-23)</p> <p>MCALLISTER C F ET AL.: "Neisseria elongata NRL FKBP immunophilin homolog gene" XP002138656 Note: 100% nt seq identity of bp 125-138 with bp 635-648 of SEQ ID NO:1745 (65.8% nt seq identity in 237 bp overlap).</p> <p>the whole document</p> <p>-& MCALLISTER C F ET AL.: "Analysis in <i>Neisseria meningitidis</i> and other <i>Neisseria</i> species homologous to the FKBP immunophilin family" <i>MOLECULAR MICROBIOLOGY</i>, vol. 10, no. 1, October 1993 (1993-10), pages 13-23, XP000907304 abstract figure 3</p> <p>---</p>	8,11,12
X	<p>SAMPSON B A ET AL.: "Neisseria meningitidis encodes an FK506-inhibitable rotamase" PROC. NAT'L. ACAD. SCI. USA, vol. 89, no. 4, 15 February 1992 (1992-02-15), pages 1164-1168, XP002138648 Note: 100% nt seq identity of bp 278-288 (284-294) with bp 719-729 of SEQ ID NO:1745 (60.5% nt seq identity in 281 bp overlap). abstract figure 2</p> <p>---</p> <p>-/-</p>	8,11,12

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Int'l Application No.
PCT/US 99/09346

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	HACKER J ET AL.: "Immunophilins: structure-function relationship and possible role in microbial pathogenicity." MOLECULAR MICROBIOLOGY, vol. 10, no. 3, November 1993 (1993-11), pages 445-456, XP000907321 abstract ---	13,14,17
X	DATABASE EMPROL [Online] EMBL ID ECUW93, AC U14003 (partial), 30 November 1994 (1994-11-30) BURLAND V ET AL.: "Escherichia coli K-12 chromosomal region from 92.8 to 00.1 minutes" XP002138657 Note: 100% nt seq identity of bp 37827-37839 with bp 1186-1174 of SEQ ID NO:2791. page 4 -----	8,11,12

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

Invention 1. Claims: 1,3,16,18 (all completely); 2,4-15,17 (all partially)

A protein comprising the amino sequence of SEQ ID NO:2790 or comprising a fragment of at least 7 (preferably consecutive) amino acids of said SEQ ID NO; a protein with 50% or greater homology to said protein(s); an antibody binding to said protein(s); a nucleic acid encoding said protein(s), preferably comprising the nucleotide sequence of SEQ ID NO:2789 or a fragment comprising 10 or more consecutive nucleotides thereof; complementary nucleic acid molecules; compositions comprising said protein(s), nucleic acid(s) or antibody for vaccination, diagnosis or pharmaceutical use, preferably immunogenic compositions comprising said protein(s), and the use of said composition(s).

Invention 2. Claims: 2,4-15,17 (all partially)

A protein comprising an amino sequence according to SEQ ID NO:2 or comprising a fragment of at least 7 consecutive amino acids of said SEQ ID NO; an antibody binding to said protein(s); a nucleic acid encoding said protein(s), preferably comprising a nucleotide sequence according to SEQ ID NO:1 or a fragment comprising 10 or more consecutive nucleotides thereof; complementary nucleic acid molecules; compositions comprising said protein(s), nucleic acid(s) or antibody for vaccination, diagnosis or pharmaceutical use, preferably immunogenic compositions comprising said protein(s), and the use of said composition(s).

Inventions 3-1510. Claims: 2,4,-15,17 (all partially)

Same as invention 2 but for proteins limited to the even-numbered SEQ ID NOs:4-3020 except 2790, and for nucleic acids limited to the corresponding odd-numbered SEQ ID NOs:3-3019 except 2789. E.g., invention 3: limited to SEQ ID NO:4 and SEQ ID NO:3, invention 4: limited to SEQ ID NO:6 and SEQ ID NO:5, . . . , invention 1509: limited to SEQ ID NO:3018 and SEQ ID NO:3017, and invention 1510: limited to SEQ ID NO:3020 and SEQ ID NO:3019.

Box I Observations where certain claims were found unsearchable (Continuation of Item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. Claims Nos.: because they relate to subject matter not required to be searched by this Authority, namely:

2. Claims Nos.: because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:

3. Claims Nos.: because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of Item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.

2. As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.

3. As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
1,3,16,18 (all completely); 2,4-15,17 (all partially). Inventions searched:
#1 (SEQ ID NOS 2789/2790), #2 (1/2), #222 (441/442), #246 (489/490), #602 (1201/1202), #729 (1455/1456), #874 (1745/1746), #1397 (2791/2792)

4. No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

The additional search fees were accompanied by the applicant's protest.

No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

or international patent family members

International Application No.
PCT/EP 99/09346

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In: International Application No
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